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EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/764,516	AUBIN ET AL.	
	Examiner	**Art Unit**	
	DAVID S. KIM	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Applicant's response to the objection to **claims 30 and 31** in the previous Office Action (mailed 09 July 2008) is noted and appreciated. Applicant responded by amending these claims. Applicant's response overcomes the previous objection, which is presently withdrawn.

Claim Rejections - 35 USC § 112

2. Applicant's response to the rejection of **claims 1-13 and 17-29** under 35 U.S.C. 112, first paragraph, in the previous Office Action (mailed on 09 July 2008) is noted and appreciated. Applicant responded by requesting Examiner to reconsider the rejection. After reconsidering the rejection and the support from Applicant's disclosure, Examiner withdraws the rejection. As an additional note, Applicant's most recent amendment to the specification filed on 07 November 2008 was unnecessary for this determination of enablement under 35 U.S.C. 112, first paragraph.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claims 1-4, 8-9, 11, 17-20, 24-25, and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna et al. (U.S. Patent Application No. US 2006/0209785 A1, hereinafter

"Iovanna") in view of Nasrallah et al. ("NetCalc6 Tutorial and a Preview of NetCalc7", hereinafter "Nasrallah").

Regarding claim 1, Iovanna discloses:

A method for co-modelling a packet network and an optical network over which the packet network operates, the packet network representing a plurality of packet links between packet network nodes and the optical network representing a plurality of optical links between optical network nodes, the method comprising the steps of:

(1) generating a cost parameter (520 in Fig. 5; using this cost parameter implies that it is "generated" before it is used) comprising a cost value for each packet link (loop for other links through step 545 in Fig. 5; notice the incorporation of "C_{max}^{TL}", which is the maximum link total capacity in the network, paragraph [0087], which would incorporate the capacity value for each link) based on packet network topology information (nodes in paragraph [0066]) and packet traffic information (data packet in paragraph [0066]) and

(2) generating a basic optical capacity (paragraph [0069]; using this basic optical capacity implies that it is "generated" before it is used; notice the incorporation of the cost parameter by equivalence or by influence, paragraph [0069], which would incorporate "C_{max}^{TL}", which is the maximum link total capacity in the network, paragraph [0087], which would incorporate the capacity value for each link) comprising a capacity value for each optical link (loop for other links through step 545 in Fig. 5) based on optical network topology information (paragraph [0069]) and the cost parameter (paragraph [0069]).

Iovanna does not expressly disclose:

said packet network being a simulated packet network;

said optical network being a simulated optical network; and

the cost parameter comprising a basic packet capacity.

Regarding the *simulated* packet network and the *simulated* optical network, simulated networks are well known in the art, as shown by Nasrallah ("network design" on slide 9). At the time the invention

was made, it would have been obvious to one of ordinary skill in the art to employ simulated versions of the networks of Iovanna. One of ordinary skill in the art would have been motivated to do this to test the routing strategies and algorithms of Iovanna (paragraph [0028]) before deploying them into actual networks.

Regarding the cost parameter, notice that this parameter may refer to capacity (Iovanna, paragraphs [0067-0068]). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ a cost parameter that comprises a basic packet capacity. One of ordinary skill in the art would have been motivated to do this since one intuitive way to express a cost parameter is in terms of capacity/bandwidth. That is, capacity/bandwidth of a link is a limited resource that provides a constraint for traffic flows. When one discusses the cost of a traffic flow to a link, one generally considers the cost of that traffic flow to the available capacity/bandwidth of that link.

Regarding claim 2, Iovanna in view of Nasrallah discloses:

A method for co-modelling according to claim 1, wherein the step of generating a basic packet capacity further comprises the steps of:

(1) combining the packet network topology information in the form of a packet network topology input (e.g., the consideration of any two nodes in paragraph [0066]) and the packet traffic information in the form of a packet traffic matrix input (a matrix is a common way to tabulate links and their respective traffic assignments; notice the treatment of each link in paragraph [0076]) to create the simulated packet network; and

(2) assigning each packet link (loop for other links through step 545 in Fig. 5) of the simulated packet network a flow to create the basic packet capacity for the simulated packet network (e.g., 520 in Fig. 5;); and

wherein the step of generating a basic optical capacity further comprises the steps of:

(3) combining the optical network topology information in the form of an optical network topology input (e.g., the consideration of the physical level in paragraph [0069]) and the basic packet capacity (see the treatment of this limitation in claim 1 above) to form the simulated optical network; and

(4) assigning each optical link (loop for other links through step 545 in Fig. 5) of the simulated optical network a flow to create the basic optical capacity for the simulated optical network (notice the treatment of each link in paragraph [0076]).

Regarding claim 3, Iovanna in view of Nasrallah discloses:

A method for co-modelling according to claim 2, the method further comprising the steps of:

(1) supplying the packet network topology input (implied by the incorporation of the packet network topology input in claim 2);

(2) supplying the packet traffic matrix (implied by the incorporation of the packet traffic matrix in claim 2);

(3) supplying the optical network topology (implied by the incorporation of the optical network topology in claim 2).

Regarding claim 4, Iovanna in view of Nasrallah discloses:

A method for co-modelling according to claim 2, further comprising generating the packet network topology input, the packet traffic matrix input and the optical network topology input for use in co-modelling the simulated packet network and the simulated optical network over which the simulated packet network operates (generation of these limitations is implied by the incorporation of these limitations in claim 2).

Regarding claim 8, claim 8 is a method claim that corresponds largely to the method claim 1. Therefore, the recited steps in method claim 1 read on the corresponding steps in method claim 8. Claim 8 also includes limitations absent from claim 1. Iovanna in view of Nasrallah also discloses these limitations:

(3) performing analysis on the simulated packet network and the simulated optical network over which the simulated packet network operates (e.g., 565 in Fig. 5, performance comparisons in Figs. 6-9; analysis implied by “state information” in paragraphs [0062-0063]; “analysis” in paragraph [0066]; “check” in paragraph [0071]).

Regarding claim 9, claim 9 is a method claim that introduces limitations that correspond to the limitations introduced by method claim 2. Therefore, the recited steps in method claim 2 read on the corresponding steps in method claim 9.

Regarding claim 11, Iovanna in view of Nasrallah discloses:

A method for co-modelling and analyzing according to claim 8, wherein the step of performing analysis on the simulated packet network and the simulated optical network over which the simulated packet network operates comprises network capacity planning of the simulated packet network and the simulated optical network over which the simulated packet network operates (performance comparisons in Figs. 6-9).

Regarding claims 17-20, 24-25, and 27, claims 17, 18, 19, 20, 24, 25, and 27 are computer usable medium claims that introduce limitations that correspond to the limitations introduced by method claims 1, 2, 3, 4, 8, 9, and 11, respectively. Therefore, the recited steps in method claims 1-4, 8-9, and 11 read on the corresponding limitations in computer usable medium claims 17-20, 24-25, and 27.

6. **Claims 5-7 and 21-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna in view of Nasrallah as applied to the claims above, and further in view of the admitted prior art (hereinafter the “APA”).

Regarding claim 5, Iovanna in view of Nasrallah discloses:

A method for co-modelling according to claim 2, wherein the packet network topology input comprises information regarding a plurality of routers (routers 10-15 in Fig. 2) in the simulated packet network, information regarding source-destination router ordered pairs in the simulated packet network (e.g., pair of nodes in paragraph [0077]), and information regarding a plurality of packet links in the simulated packet network (e.g., link information in paragraph [0076]).

However, Iovanna in view of Nasrallah does not expressly disclose:

wherein assigning each packet link of the simulated packet network a flow comprises the steps of:

(1) setting capacity to zero for all packet links;

(2) performing a series of steps, as follows, for each source-destination router ordered pair;

A. determining a shortest packet path between routers;

B. establishing a source-destination packet traffic flow based on the shortest packet path; and

C. incrementing capacity of each packet link traversed by the packet traffic flow; and

(3) increasing capacity of packet links per packet network engineering guidelines.

Regarding "setting capacity to zero for all packet links", a zero setting is a common default value for computations. So, this would be an obvious variation.

Regarding "series of steps" for each pair, it would be obvious to perform route computation (e.g., paragraph [0077]) for each pair for the purpose of thoroughly computing routes for all pairs.

Regarding steps A and B, the APA teaches that these steps correspond to known traffic engineering techniques (APA, p. 14, l. 12-19). So, obvious variations could employ these techniques for their known benefits.

Regarding step C, one would obviously increment the capacity assignment for the packet links traversed by the packet traffic flow from zero to their assignment values.

Regarding "increasing capacity", one would obviously do so to maximize the capacity for the packet links for maximum traffic throughput.

Regarding claim 6, Iovanna in view of Nasrallah discloses:

A method for co-modelling according to claim 2, wherein the optical network topology input comprises information regarding a plurality of cross-connect switches (OXCs 20-25 in Fig. 2) in the simulated optical network and information regarding a plurality of optical links (e.g., physical level in paragraph [0069]) in the simulated optical network.

However, Iovanna in view of Nasrallah does not expressly disclose:

wherein assigning each optical link of the simulated optical network a flow comprises the steps of:

(1) setting capacity to zero for all optical links;

(2) performing a series of steps, as follows, for each packet link between two routers:

A. determining a shortest optical path between cross-connect switches supporting the two routers;

B. establishing an optical connection to support the packet link; and

C. incrementing capacity of each optical link traversed by the optical connection; and

(3) increasing capacity of optical links per optical network engineering guidelines.

Regarding “setting capacity to zero for all packet links”, a zero setting is a common default value for computations. So, this would be an obvious variation.

Regarding “series of steps” for each pair, it would be obvious to perform route computation (e.g., paragraph [0077]) for each pair for the purpose of thoroughly computing routes for all pairs.

Regarding steps A and B, the APA teaches that these steps correspond to known traffic engineering techniques (APA, p. 16, l. 9-18). So, obvious variations could employ these techniques for their known benefits.

Regarding step C, one would obviously increment the capacity assignment for the optical links traversed by the optical connection from zero to their current assignment values.

Regarding “increasing capacity”, one would obviously do so to maximize the capacity for the optical links for maximum traffic throughput.

Regarding claim 7, claim 7 is a method claim that introduces limitations that correspond to the limitations introduced by method claim 6. Therefore, the recited steps in method claim 6 read on the corresponding steps in method claim 7.

Regarding claims 21-23, claims 21, 22, and 23 are computer usable medium claims that introduce limitations that correspond to the limitations introduced by method claims 5, 6, and 7, respectively. Therefore, the recited steps in method claims 5-7 read on the corresponding limitations in computer usable medium claims 21-23.

7. **Claims 10 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna in view of Nasrallah as applied to the claims above, and further in view of Doverspike et al. (U.S. Patent Application Publication No. US 2004/0107382 A1, hereinafter "Doverspike").

Regarding claim 10, Iovanna in view of Nasrallah does not expressly disclose:

A method for co-modelling and analyzing according to claim 8, wherein the step of performing analysis on the simulated packet network and the simulated optical network over which the simulated packet network operates comprises analyzing survivability of the simulated packet network and the simulated optical network over which the simulated packet network operates.

However, such analysis of survivability is a common consideration for networks, as shown by Doverspike (e.g., consideration of fault recovery and restoration in paragraphs [0002-0004]). One of ordinary skill in the art would have been motivated to do this since it is generally known that modern telecommunication networks are reconfigurable and should provide for fast restoration from network failures (Doverspike, paragraph [0002]).

Regarding claim 26, claim 26 is a computer usable medium claim that introduces limitations that correspond to the limitations introduced by method claim 10. Therefore, the recited steps in method claim 10 read on the corresponding limitations in computer usable medium claim 26.

8. **Claims 12-16 and 28-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Iovanna in view of Nasrallah and Doverspike as applied to the claims above, and further in view of Ghani et al. ("On IP-over-WDM Integration", hereinafter "Ghani").

Regarding claims 12, Iovanna in view of Nasrallah and Doverspike discloses:

A method for co-modelling and analyzing according to claim 8, wherein the step of performing analysis on the simulated packet network and the simulated optical network over which the simulated packet network operates comprises performing survivability analysis (e.g., consideration of fault recovery and restoration in paragraphs [0002-0004]).

Iovanna in view of Nasrallah and Doverspike does not expressly disclose:

wherein an optical failure is known to occur within the simulated optical network, the step further comprising the steps of:

(1) establishing at least one protection mechanism for each point-to-point connection in the simulated packet network;

(2) performing a series of steps, as follows, for each optical link in the simulated optical network:

A. switching all affected packet traffic flow to an at least one protection mechanism;

B. incrementing capacity of each optical link traversed by the at least one protection mechanism; and

C. restoring initial capacity values; and

(3) summing capacity requirements.

Regarding "establishing at least one protection mechanism" for each connection, it would be obvious to consider at least one protection mechanism for each connection for proper consideration of fault recovery for each connection. Additionally, proper consideration for each connection can lead to improved channel availability, as shown by the maximally-disjoint teaching of Ghani (p. 78, col. 2, l. 5).

Regarding step A, switching all affected traffic to the protection mechanism is the obviously intuitive way to treat affected traffic. Otherwise, traffic not on the protection mechanism would be lost.

Regarding step B, one would obviously increment the capacity assignment for the optical links traversed by the protection mechanism to their current assignment values.

Regarding step C, one would obviously do so to resume the normal "faultless" network operation condition.

Regarding claim 13, claim 13 is a method claim that introduces limitations that correspond to the limitations introduced by method claim 12. Therefore, the recited steps in method claim 12 read on the corresponding steps in method claim 13.

Regarding claims 14, Iovanna in view of Nasrallah, Doverspike, and Ghani discloses:

A method for analyzing survivability of a simulated packet network (Iovanna, upper part of Fig. 2; Nasrallah, see the treatment of the "simulated" limitation under claim 1 above) and a simulated optical

network over which the simulated packet network operates (Iovanna, lower part of Fig. 2; Nasrallah, see the treatment of the "simulated" limitation under claim 1 above), the simulated packet network representing a plurality of packet links between packet network nodes and the simulated optical network representing a plurality of optical links between optical network nodes, wherein an optical failure (e.g., Doverspike, "fiber cut" in paragraph [0030]) is known to occur within the simulated optical network and wherein packet link protection (e.g., Doverspike, 406 in Fig. 4) is performed in the simulated packet network.

Iovanna in view of Nasrallah, Doverspike, and Ghani does not expressly disclose:

the method comprising the steps of:

(1) establishing at least one back-up packet traffic flow tunnel for each packet link in the simulated packet transport network;

(2) performing a series of steps, as follows, for each optical link in the optical network:

A. taking an optical link out of service;

B. performing a series of steps, as follows, in a nested process for each packet link affected by the optical failure;

i. switching all packet traffic flow on the affected packet link to an at least one back-up packet traffic flow tunnel;

ii. incrementing capacity of each packet link traversed by the at least one back-up packet traffic flow tunnel; and

iii. incrementing capacity of each optical link traversed by an optical connection supporting the packet link; and

C. restoring initial capacity values; and

(3) summing packet link capacity requirements and optical link capacity requirements.

Regarding "establishing at least one back-up packet traffic flow tunnel" for each packet link, it would be obvious to consider at least one back-up packet traffic flow tunnel for each packet link for proper

consideration of fault recovery for each packet link. Additionally, proper consideration for each packet link can lead to improved channel availability, as shown by the maximally-disjoint teaching of Ghani (p. 78, col. 2, l. 5).

Regarding step A, the “optical failure” implies that an optical link is taken out of service.

Regarding step B, a nested process is a common and obvious way to loop through each affected link.

Regarding step i, switching all affected traffic to the protection mechanism is the obviously intuitive way to treat affected traffic. Otherwise, traffic not on the protection mechanism would be lost.

Regarding steps ii and iii, one would obviously increment the capacity assignment for the packet and optical links traversed by the protection mechanism to their current assignment values.

Regarding step C, one would obviously do so to resume the normal “faultless” network operation condition.

Regarding “summing” capacity requirements, one would obviously do so to find total capacity requirements for the entire network.

Regarding claims 15, Iovanna in view of Nasrallah, Doverspike, and Ghani discloses:

A method for analyzing survivability of a simulated packet network (Iovanna, upper part of Fig. 2; Nasrallah, see the treatment of the “simulated” limitation under claim 1 above) and a simulated optical network over which the simulated packet network operates (Iovanna, lower part of Fig. 2; Nasrallah, see the treatment of the “simulated” limitation under claim 1 above), the simulated packet network representing a plurality of packet links between packet network nodes and the simulated optical network representing a plurality of optical links between optical network nodes, wherein an optical failure (e.g., Doverspike, “fiber cuts” in paragraph [0004]) is known to occur within the simulated optical network and wherein packet link protection is performed in the simulated optical network (e.g., Doverspike, optical layer failure recovery in paragraph [0004]).

Iovanna in view of Nasrallah, Doverspike, and Ghani does not expressly disclose:

the method comprising the steps of:

(1) establishing at least one protection tunnel for each optical connection in the simulated optical network;

(2) performing a series of steps, as follows, for each optical link in the simulated optical network:

A. taking an optical link out of service;

B. switching all affected optical connections to an at least one protection tunnel;

C. incrementing capacity of each optical link traversed by the at least one protection tunnel; and

D. restoring initial capacity values; and

(3) summing the optical link capacity requirements.

Regarding “establishing at least one protection tunnel” for each optical connection, it would be obvious to consider at least one protection tunnel for each optical connection for proper consideration of fault recovery for each optical connection. Additionally, proper consideration for each optical connection can lead to improved channel availability, as shown by the maximally-disjoint teaching of Ghani (p. 78, col. 2, l. 5).

Regarding step A, the “optical failure” implies that an optical link is taken out of service.

Regarding step B, switching all affected traffic to the protection mechanism is the obviously intuitive way to treat affected traffic. Otherwise, traffic not on the protection mechanism would be lost.

Regarding step C, one would obviously increment the capacity assignment for the optical links traversed by the protection mechanism to their current assignment values.

Regarding step D, one would obviously do so to resume the normal “faultless” network operation condition.

Regarding “summing” capacity requirements, one would obviously do so to find total capacity requirements for the optical network.

Regarding claims 16, Iovanna in view of Nasrallah, Doverspike, and Ghani discloses:

The method according to claim 14, wherein the packet traffic flow is LSP (Label Switch Path) traffic flow (Iovanna, paragraph [0054]).

Regarding claims 28-32, claims 28, 29, 30, 31, and 32 are computer usable medium claims that introduce limitations that correspond to the limitations introduced by method claims 12, 13, 14, 15, and 16, respectively. Therefore, the recited steps in method claims 12-16 read on the corresponding limitations in computer usable medium claims 28-32.

Response to Arguments

9. Applicant's arguments filed 07 November 2008 have been fully considered but they are not persuasive. Applicant presents seven salient points.

Regarding the first point, Applicant states:

> Claim 1 recites "generating a basic optical capacity comprising a capacity value for each optical link based on optical network topology information and the <u>basic packet capacity</u>". Note that the "basic packet capacity" is generated "based on packet network topology information and packet traffic information" as also recited in claim 1. Therefore, claim 1 defines how the basic optical capacity is generated based on three variables:
> 1) packet traffic information,
> 2) packet network topology information, and
> 3) optical network topology information.
> Reference is made to Figure 4 of the present application, which similarly teaches three variables: packet traffic matrix 41, packet network topology 42, and optical network topology 43. Therefore, in Applicant's approach, there are three separate and distinct variables used in generating the basic optical capacity.
>
> (REMARKS/ARGUMENTS, p. 23-24, bridging paragraph, emphasis Applicant's).

Examiner respectfully points out the three variables of Iovanna, as already noted in the standing rejection:

1) packet traffic information – see the "data packet" in paragraph [0066], which constitutes part of the packet traffic; thus, information about this "data packet"(s) constitutes information about the packet traffic, i.e., "packet traffic information", as claimed.

2) packet network topology information – see the "nodes" in paragraph [0066], which constitute part of the topology of the packet network; thus, information about these "nodes" constitutes information about the topology of the packet network, i.e., "packet network topology information", as claimed.

3) optical network topology information – see the "information specifically regarding the physical level" and "actual physical link" in paragraph [0069], which correspond to the "optical" level as noted by "the physical domain is an optical domain" in paragraph [0051], which constitutes information at least part of the topology of the optical network; thus, "information specifically regarding the

physical level" and the "actual physical link" constitute information about the topology of the optical network, i.e., "optical network topology information", as claimed.

As addressed in the standing rejection, Iovanna employs **1)** packet traffic information (data packet in paragraph [0066] at step 505) and **2)** packet network topology information (nodes in paragraph [0066] at step 510 in Fig. 5) to generate a cost parameter (step 520), which may comprise capacity ("available link bandwidth" in paragraphs [0067-0068]), as claimed. Next, Iovanna employs this "cost parameter", which may comprise capacity, (step 520) and **3)** optical network topology information (the "information specifically regarding the physical level" and "actual physical link" in paragraph [0069] at step 525) to generate a basic optical capacity (notice the incorporation of the cost parameter by equivalence or by influence, paragraph [0069], which would incorporate "C_{max}^{TL}", which is the maximum link total capacity in the network, paragraph [0087], which would incorporate the capacity value for each link), as claimed. Accordingly, in view of this detailed mapping of the three variables of Iovanna, this first point is not persuasive.

Regarding the second point, Applicant states:

> Turning now to Iovanna, it can be seen that there is no disclosure for generating a basic optical capacity based on the aforementioned three variables. Iovanna teaches in paragraph [0086] that "the amount of available capacity on the link when the link state information is gathered is indicated with C_i^{AL}." Iovanna does not disclose how the available capacity on each link is determined, but instead discloses how a weight function that is related to the available capacity (see paragraph [0087]) is computed. For instance, Iovanna teaches in paragraph [0074] that "The weight previously assigned to the link is modified and refined (step 535) according the availability of the second resource and a final weight is assigned to the link." However, considering the availability of the second resource is not the same thing as considering Applicant's three variables as set out above. For instance, even if the availability of the second resource in Iovanna can be considered analogous to network topology information, which Applicant does not concede, this would not specifically pertain to both "packet network topology information" and separate "optical network topology information" as claimed by the Applicant.

(REMARKS/ARGUMENTS, p. 24, middle paragraph).

Examiner respectfully notes that the standing rejection does not map the teachings of Iovanna as Applicant has done in this second point. For instance, the standing rejection does not map "the availability of the second resource in Iovanna" to "network topology information", contrary to Applicant's mapping. Rather, the standing rejection maps information about the "nodes" in paragraph [0066] to

“packet network topology information” and the “information specifically regarding the physical level” and “actual physical link” in paragraph [0069] to “optical network topology information”. For more details, see the detailed mapping of the three variables of Iovanna in the first point above. Accordingly, this second point is not persuasive.

Regarding the third point, Applicant states:

> In regards to considering "packet network topology information" and "optical network topology information" as claimed by the Applicant, the Examiner refers to Iovanna at paragraphs [0066] and [0069], respectively. Paragraph [0066] teaches that "an analysis of the network links is started at step 510 by considering a first link in the network," while paragraph [0069] teaches that "information specifically regarding the physical level is taken into account...". However, even if these portions of Iovanna relate to network topology information, which Applicant does not concede, they do not specifically relate to both "packet network topology information" and separate "optical network topology information" as claimed by the Applicant.
>
> (REMARKS/ARGUMENTS, p. 24, last paragraph).

Examiner respectfully notes that the standing rejection maps information about the “nodes” in paragraph [0066] to “packet network topology information” and the “information specifically regarding the physical level” and “actual physical link” in paragraph [0069] to “optical network topology information”. For more details, see the detailed mapping of the three variables of Iovanna in the first point above. Accordingly, this third point is not persuasive.

Regarding the fourth point, Applicant states:

> The Examiner contends that "it would have been obvious to one of ordinary skill in the art to employ simulated versions of the networks of Iovanna. One of ordinary skill in the art would have been motivated to do this to test the routing strategies and algorithms of Iovanna (paragraph [0028]) before deploying them into actual networks." Even if this is true, which Applicant does not concede, this does not explain how the person skilled in the art would arrive at "A method for co-modelling a simulated packet network and a simulated optical network over which the simulated packet network operates" as claimed by the Applicant. For instance, the person skilled in the art might simply model a simulated optical network. Furthermore, the Examiner's reasoning does not explain how the person skilled in the art would arrive at generating the basic optical capacity based on Applicant's three variables as set out above. Therefore, the Examiner's reasoning for the obviousness rejection is not valid.
>
> (REMARKS/ARGUMENTS, p. 25, last full paragraph, emphasis Applicant’s).

Examiner respectfully notes that Iovanna teaches one network that comprises both a packet network (logical level in the upper part of Fig. 2) and an optical network (physical level in the lower part of Fig. 2) over which the packet network operates (operation of the logical level over the physical level in Fig. 2).

Modelling of the entire network of Iovanna would include “co-modelling” of “a simulated packet network” and “a simulated optical network over which the simulated packet network operates”. Furthermore, the standing rejection addresses Applicant’s three variables, as detailed in the treatment of the first point above. Accordingly, this fourth point is not persuasive.

Regarding the fifth point, Applicant states:

> Furthermore, Applicant submits that one skilled in the art would not combine the subject matter of Iovanna and Nasrallah, as simply simulating the methods of Iovanna on a simulated network in a manner disclosed by Nasrallah would not result in the claimed invention. Iovanna is directed to routing strategies for packets, so even if this was simulated before implementation on an existing network, which is the intended purpose of Iovanna, this does not result in the claimed invention. Applicant further submits that one skilled in the art would not consider combining the cited references as they are directed to different purposes, namely routing on existing networks and modelling of networks to accommodate expected traffic flows.
>
> (REMARKS/ARGUMENTS, p. 25-26, bridging paragraph).

Examiner respectfully notes that the purposes of these references are not so different. That is, the “routing on existing networks” of Iovanna is shown in Fig. 5. Fig. 5 also constitutes “modeling of networks to accommodate expected traffic flows”, e.g., the computed “optical path” in paragraph [0076] and Fig. 5, stored in the path databases at step 575, constitutes an example of a network model to accommodate expected traffic flows. Due to such similarities in purpose, this fifth point is not persuasive.

Regarding the sixth point, Applicant states:

> Claim 14 recites "A method for analyzing survivability of a simulated packet network and a simulated optical network over which the simulated packet network operates". Therefore, claim 14 is directed to a method for analyzing survivability of a simulated packet transport network. As described on page 3, lines 22-25 of the present application, "A survivability analysis on the network allows a user to simulate a failure of any single optical link in the simulated packet transport network and examine how this affects the traffic carrying requirements of the network."
>
> The Examiner refers to Iovanna at Figure 2, but this is merely a "schematic view showing an exemplary multi-layer communications network comprising a plurality of nodes associated to Label Switched Routers in a MPLS domain and Optical Cross Connects in an optical domain" as taught in paragraph [0040]. Iovanna simply has nothing to do with analyzing survivability of a simulated packet transport network. Nasrallah similarly is not directed to analyzing survivability of a simulated packet network.
>
> (REMARKS/ARGUMENTS, p. 27, first two paragraphs).

Examiner respectfully directs attention to the application of teachings from Doverspike in the standing rejection to address the limitation of “analyzing survivability”. Accordingly, this sixth point is not persuasive.

Regarding the seventh point, Applicant states:

> Moreover, the Examiner's reasoning is severely lacking. For instance, the Examiner states that "Regarding step B, one would obviously increment the capacity assignment for the optical links traversed by the protection mechanism to their correct assignment values." However, no rational is provided whatsoever for this allegation. As noted above, the Examiner must provide some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. Co. v. Teleflex Inc.*,127 S.Ct. 1727, 1741 (2007). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the appellant. *See Oetiker*, 977 F.2d at 1445. Seeing as though the Examiner is missing rational for rejection claim 14, the Examiner has not fulfilled the initial burden for establishing a proper rejection under 35 U.S.C. 103.

(REMARKS/ARGUMENTS, p. 28, middle paragraph).

Examiner respectfully notes that the use of a back-up protection mechanism generally suggests a start value of zero or other low value of capacity on the back-up protection mechanism. Eventually, when the traffic flow stabilizes over the back-up protection mechanism, the capacity level is optimized to its appropriate assignment value. The transition from the start value of zero of other low value of capacity on the back-up protection mechanism to the appropriate assignment value of optimized capacity may be suitably characterized as “incrementing”. Accordingly, this seventh point is not persuasive.

Summarily, Applicant’s arguments are not persuasive. Accordingly, Examiner respectfully maintains the standing rejections.

<u>Conclusion</u>

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID S. KIM whose telephone number is (571)272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. S. K./
Examiner, Art Unit 2613

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613